Appl. No. 10/618,996
Response dated: February 26, 2008

Amendments to the Drawings:

None.

6

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REMARKS/ARGUMENTS

Claims.

Claims 8-20 are pending.

Claims 1-7 were cancelled in a Response dated September 7, 2007.

Claim 14 has been amended to correct a typographical error inadvertently introduced in the Response dated September 7, 2007. In particular, a line return was inadvertently omitted in claim 14, line 4, after the semicolon. Applicant has made the appropriate correction. In that same portion of claim 14, Applicant also added the word "of" after "assigning the plurality".

Specification.

The specification was amended to reference a related application to which priority was claimed in the data sheet at the time of filing the application. That priority claim was acknowledged in the filing receipt mailed October 14, 2003.

35 U.S.C. § 112.

Claims 8-20 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement on the grounds that the claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

35 U.S.C. § 112 - Claim 8

Regarding claim 8, the Actions states:

> Claim 8 recites, "...compensating for the time shift between the data
> signals;" There is no figure or schematic diagram provided to teach a
> person of ordinary skill how the time shift is compensated. Fig. 15 shows
> buffer (46) which provide for the time shift or delay after the deinterleaver
> (40). The same buffer (46) is provided prior to the interleaver (42). The

7

> claim seems to suggest that the time shift is compensated by the buffer
>
> (46). However, the buffer (46) prior to the interleaver is the same as that
>
> of the buffer after the interleaver (46). Therefore it is unclear which
>
> element is provided to compensate for the time shift.

In response, Applicant agrees that the present application does disclose buffers (46) in Fig. 15. Some buffers are after the deinterleaver, and some buffers are before the interleaver. The buffers after the deinterleaver insert known time shifts as recited in claim 8, and the buffers before the interleaver compensate for those time shifts. Similar embodiments are illustrated in Figs. 7 and 9, and embodiments using fiber (48) to insert the time shifts are illustrated in Figs. 8 and 10-13. Descriptions of those figures are provided beginning at paragraph [0059].

With reference to Fig. 9 and paragraph [0062], the process of compensating for the time shift is described. In particular:

> The buffers 46 receive the data on the channels 44 and introduce delays to
>
> counter the delays introduced by the buffer 46 associated with the
>
> deinterleaver 40. The buffer 46 on the fourth channel introduces the
>
> largest delay and the buffer on the second channel introduces the smallest
>
> delay in order to realign the information carried on the channels 44.

As a result, the present application describes the manner in which the buffers may be used to compensate for the time shift between the data signals. In the example illustrated in Fig. 9, the channel on which the largest time shift was inserted at the deinterleaver (channel 2) receives the smallest time shift at the interleaver. Similarly, the channel on which the smallest time shift was inserted at the deinterleaver (channel 4) receives the largest time shift at the interleaver. Those channels with intermediate time shifts (channels 1 and 3) receive complimentary time shifts so as to "realign the information carried on the channels 44" as recited in paragraph [0062].

Similarly, paragraph [0063] described the process with regard to Fig. 10 in which fiber coils 48 are used "for delaying the optical signals on channels 44." In particular, "[t]he length of the fiber coils 48 are selected to compensate for the delay introduced by the fiber coils 48 associated with the deinterleaver 40 resulting in the data on the channels 44 being aligned at the fiber coil 58 outputs."

8

Therefore, Applicant submits that the present application describes the claimed subject matter (specifically the "compensating" element of claim 8) in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Accordingly, Applicant requests that the Rejection under 35 U.S.C. § 112 be withdrawn.

35 U.S.C. § 112 - Claim 14

Regarding claim 14, the Actions states:

> Claim 14 recites, "...assigning the plurality portions in a first order to a plurality of data signals;..." There is no figure or schematic diagram provide to enable one of ordinary skill in the art how the signals are divided into different portions and further it is unclear how the plurality of portions are assigned.

In response, Applicant refers to Fig. 5 and paragraph [0052] through [0055], which describe one embodiment of this aspect of the claimed invention. In particular, paragraph [0052] states:

> The deinterleaver 40 in this embodiment processes the first four portions as described above for the deinterleaver 40 shown in Fig. 4.

With regard in Fig. 4, paragraph [0051] states:

> The deinterleaver 40 receives input traffic and outputs first, second, third, and fourth portions on first, second, third, and fourth channels 44.

This is an example of the first "separating" element of claim 14 in which input traffic is separated into a plurality (four in this example) of portions, and the first "assigning" element of claim 14 in which the portions are ordered (in this example, first, second, third, and fourth portions on first, second, third, and fourth channels 44). Referring back to paragraph [0052]:

> The deinterleaver 40 places the second set of four portions in the channels 44 in a different order, with input portions 1, 2, 3, and 4 being placed, respectively, on output channels 3, 1, 4, and 2.

This is an example of the second "separating" element of claim 14 in which input traffic is separated into an additional plurality (four in this example) of portions. This is also an example of the second "assigning" element of claim 14 in which the plurality of "additional portions" are ordered. In particular, in this example a particular assignment is described ("input portions 1, 2, 3, and 4 being

9

placed, respectively, on output channels 3, 1, 4, and 2"). This is only an example, and other variations are possible. For example, paragraph [0052] continues to say:

> The order of the second set of portions on the channels 44 may be
>
> preselected or may be random.

Furthermore, paragraph [0051] states:

> The portions may be single data bits, single bytes, or some number of bits
>
> or bytes depending upon the structure of the data in the input traffic.

In addition to the written description, Fig. 5 illustrates one embodiment of the "separating" and "assigning" elements from claim 14. In particular, Fig. 5 provides a visual illustration of one example of the manner in which different portions are assigned to different orders, as is also described in paragraph [0052]. This figure would enable one of ordinary skill in the art to understand how the signals are divided into different portions and how the plurality of portions are assigned.

Therefore, Applicant submits that the present application describes the claimed subject matter (specifically the first and second "assigning" elements of claim 14) in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Accordingly, Applicant requests that the Rejection under 35 U.S.C. § 112 be withdrawn.

35 U.S.C. § 112 - Claims 9-13 and 15-20.

The Action did not make a specific reference to claims 9-13 and 15-20. However, those claims depend, directly or indirectly, from claims 8 and 14, and Applicant assumes they were rejected because of their dependency on claims 8 and 14. Therefore, Applicant submits that claims 9-13 and 15-20 now meet the requirements of 35 U.S.C. § 112.

Accordingly, Applicant requests that the Rejection under 35 U.S.C. § 112 be withdrawn.

35 U.S.C. § 103.

Claims 8-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,572,350, issued to Spanke (hereinafter "Spanke"). Applicant disagrees.

10

Spanke is directed to a method and apparatus to compensate for differential attenuation caused by an optical time slot interchanger. In particular, when optical signals are intentionally delayed, they typically become attenuated. Differences in intensity between photonic signal groups cause difficulties in demodulation and detection of the data. *See*, for example, Spanke at col. 1, lines 16-34. Spanke seeks to address these problems by adjusting the intensity of each optical data slot after the slot leaves the optical time slot interchanger. *See*, for example, Spanke at col. 2, lines 14-26.

In contrast, the claimed invention provides privacy and security in optical communications systems. *See*, for example, the present application at paragraphs [0008]-[0012].

35 U.S.C. § 103 - Claim 8

The Action references Fig. 1 of Spanke and the corresponding written description in which Spanke describes as an optical time slot interchange system (*See* col. 3, lines 5-6). In particular, the Action references elements in the optical time slot interchanger 30 of Fig. 1. The optical time slot interchanger 30 rearranges the order of the slots in the optical data frames as can be seen, for example, by comparing data frames 20 and 40 of Fig. 1, and with reference to col. 3, lines 28-64.

35 U.S.C. § 103 - Claim 8 - "Compensating" Element.

The Action states that Spanke fails to teach the element of "compensating for the time shift between the data signals", but states that Spanke:

> discloses controllable combiner which control signals inputted to different slots. Therefore, it would have been obvious that the combiner is controlled such that the time delay is compensated in order to provide synchronization of the signals.

Applicant disagrees. Spanke cannot teach the "compensating" element of the claimed invention, because Spanke operates in a way that prohibits it from compensating for the time delay. In particular, the purpose of the optical time slot interchanger 30 of Spanke is to introduce delays in data signals. These delays are necessary so that the optical time slot interchanger 30, as its name suggests, interchanges the optical time slots. In particular, the optical time slot interchanger 30 introduces longer delays in some time slot and it introduces shorter delays in other time slots, so that

11

the order of the time slots are interchanged. *See*, for example, Spanke at col. 3, lines 28-64, and in Fig. 1 with reference to data frames 20 and 40. The delays are essential for the time slots to assume different orders and, therefore, the delays taught in Spanke are not and must not be compensated. If it were otherwise, the optical time slot interchanger would fail to operate properly.

The Action states "it would have been obvious that the combiner is controlled such that the time delay is compensated in order to provide synchronization of the signals." However, Spanke describes the operation of the combiner 34, and it is not to compensate for the delays. On the contrary, the combiner 34 is used "to switch the right slot from the right delay path to be the output of the OTSI 30" (Spanke at col. 3, lines 43-44). This is described in more detail at col. 3, lines 49-56:

> In optical data frame 40, slot N has been delayed N-2 time slots and
> inserted after slot 2 which was delayed only by the shortest path from
> 1XM splitter 32 to MX1 combiner 34, hence, relatively no delay. Slot 1
> has been delayed only one time slot and inserted after slot N. Slot N-1 has
> been delated N time slots and inserted after slot 1. The remainder of the
> slots N-2 to 3 are inserted are inserted in descending order after slot N-1.

As can be seen from the figures and the written description, the combiner 34 of Spanke does not compensate for the time delay introduced by the optical time slot interchanger 30. Rather, the combiner 34 is used to combine the various time slots in their interchanged order so that the output traffic is different than the input traffic, as illustrated in Fig. 1 of Spanke with reference to data frames 20 and 40.

Therefore, Applicant submits that the "compensating" element of claim 8 is not taught by Spanke. Furthermore, because the stated purpose of the optical time slot interchanger 30 of Spanke is to introduce a time delay (and not to compensate for that time delay), Applicant submits that the "compensating" element of claim 8 is not obvious from Spanke. On the contrary, Spanke teaches away from the claimed invention by teaching a system in which the output traffic is intentionally made different than the input traffic.

12

35 U.S.C. § 103 - Claim 8 - "Interleaving" Element.

The Action also states that Spanke teaches the element of "interleaving the data signals from the channels into output traffic corresponding to the input traffic". The Action goes on to say "the data signals combined by combiner which is controllable to function as deinterleaver by switching the signal into different slots" and cites Spanke at col. 3, lines 5-64.

Applicant disagrees. Spanke does not teach "interleaving the data signals from the channels into output traffic corresponding to the input traffic", but instead teaches interchanging the time slots. As discussed above, Spanke does not compensate for the time delays introduced in the OTSI 30. On the contrary, Spanke introduces delays and maintains them so that the output traffic is different than the input traffic. As a result, the data signals at the output frame 40 do not "correspond" to the data signals at the input frame 20, as seen in Fig. 1 of Spanke.

As also discussed above, Spanke teaches away from the claimed invention because one of the purposes of Spanke is to change the order of the time slots and, therefore, to ensure that the output traffic does not correspond to the input traffic. Therefore, it would not have been obvious to change Spanke to correspond to the claimed invention, because to do so would make Spanke inoperable for its intended purpose.

Therefore, Applicant submits that the "interleaving" element of claim 8 is not taught by Spanke. Furthermore, because the stated purpose of the optical time slot interchanger 30 of Spanke is to introduce a time delay (and not compensate for that time delay) so that the optical time slots are interchanged, Applicant submits that the "interleaving" element of claim 8 is not obvious from Spanke. On the contrary, Spanke teaches away from the claimed invention.

35 U.S.C. § 103 - Claims 9 - 13.

Claims 9-13 depend, directly or indirectly, from claim 8. Therefore, for at least the reasons set forth hereinabove with regard to claim 8, Applicant submits that claims 9-13 are patentable over Spanke.

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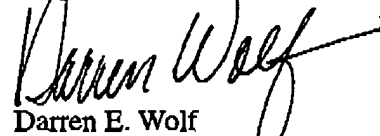Appl. No. 10/618,996
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Conclusion.

Applicant submits that the application, as amended, is in condition for allowance. If the Examiner has any questions pertaining to this Amendment or to the subject application in general, the Examiner is encouraged to contact the undersigned.

Applicant believes that no fees are due with this Response. However, in the event fees are due with this Response, the Commissioner is hereby authorized to debit such fees from Charge Account Number 50-3198, in the name of Dickie, McCamey & Chilcote.

Respectfully submitted,

Darren E. Wolf
Registration No. 36,310

Dickie, McCamey & Chilcote, P.C.
Two PPG Place, Suite 400
Pittsburgh, PA 15222-5402
412-392-5681

14